

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLN. OF: ASPAR et al.

FILED: February 23, 2004

FOR: A METHOD OF PRODUCING A THIN LAYER OF ...

DOCKET: BREV 12370 CON4

MAIL STOP PATENT APPLICATION

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

In connection with the above-entitled matter, Applicants hereby proffer U.S. Patent Office Forms PTO-1449 and PTO-892. The present application is a continuation under 37 CFR 1.53(b) of application Serial No. 09/777,516, wherein the references referred to in the enclosed U.S. Patent Office Forms PTO-1449 and PTO-892 have been previously submitted or cited. Accordingly, it is respectfully submitted that no copies of these references are believed necessary. The claims in the present application are believed to be patentably distinguished over these references.

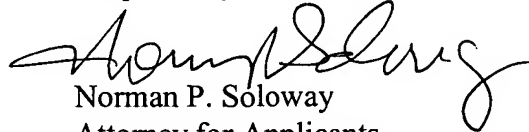
This information disclosure statement is being made pursuant to the duty of disclosure imposed by law and formulated in 37 CFR 1.56(A). No representation is made that the information thus disclosed in fact constitutes prior art or that it is the closest prior art, inasmuch as 37 CFR 1.56(A) relies on a materiality concept which depends on subjectivity.

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 08-1391.

Respectfully submitted,




Norman P. Soloway
Attorney for Applicants
Reg. No. 24,315

CERTIFICATE OF EXPRESS MAIL

"Express Mail" Mailing Label No. ER 772543646 US
Date of Deposit February 23, 2004

I hereby certify that this paper and the papers listed thereon are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above, and is addressed to MAIL STOP PATENT APPLICATION, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signature of person mailing: 

Name of person mailing: Shauna Bronson

NPS:sb

HAYES SOLOWAY P.C.
130 W. CUSHING ST.
TUCSON, AZ 85701
TEL. 520.882.7623
FAX. 520.882.7643

175 CANAL STREET
MANCHESTER, NH 03101
TEL. 603.668.1400
FAX. 603.668.8567

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370 C

Application Number

Applicant(s)

ASPAR ET AL

Filing Date

Group A

COPY

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
Dac		5,256,581	10/26/93	FOERSTNER ET AL	437	24	
Dal		6,020,252	2/1/00	ASPAR ET AL	438	458	

11003 U.S. PTO
09/777516
02/06/01

FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

EXAMINER

D.B. Courts

DATE CONSIDERED

12-21-01

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

ATTY DOCKET NO.
BREV 12370 CON 2

SERIAL NO.

ASPAR ET AL

FILING

COPY

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
Dac	4,704,302	11/3/87	Bruel et al			
	5,234,535	8/10/93	NBeyer et al			
	5,494,835	2/27/96	Bruel			
	5,804,086	9/8/98	Bruel			
	5,817,368	10/6/98	Hashimoto			
	5,863,830	1/26/99	Bruel et al			
	5,897,331	4/27/99	Sopori			
	5,633,174	5/27/97	Li			
	5,250,446	10/5/93	Osowa et al			

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
Dac	WO95/20824	8/3/95	PCT			✓	
	EP 0703 609	3/27/96	EPO			✓	
	0 660 140	6/28/95	EPO			✓	
	GB 2 211 991	7/12/89	UK				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Dac		EerNisse, E.P. et al, "Role of integrated lateral stress in surface deformation of He-implanted surfaces," Journal of Applied Physics, Vol 48, No 1, January 1997, pp 9-17
Dac		Evans, J.H., "An interbubble fracture mechanism of blister formation on Helium-Irradiated Metals," Journal of Nuclear Materials, Vol 68, 1997, pp 129-140

EXAMINER

D.M. Courts

DATE CONSIDERED

12-21-07

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE TATION
(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370 CON

Application Number

Applicant(s)

Aspar et al

Filing Date

Group Art Unit

COPY

*EXAMINER
INITIAL

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Roth, J., "Blistering and bubble formation," Inst. Phys. Conf. Ser., No. 28, 1976, pp 280-293

Ligeon, E. et al, "Hydrogen Implantation in Silicon Between 1.5 and 60 KeV," Radiation Effects, Col. 27, 1976, pp 129-137

Ascheron, C. et al, "Gettering a Copper in Proton- and Helium-Bombarded Buried Regions of Gallium Phosphide," Phys. Stat. So. (a), 106, 73, 1988, pp. 73-79

Ascheron, C. et al, "A comparative study of Swelling, Strain and Radiation damage of High-Energy Proton-Bombarded GaAs, GaP, InP, Si and Ge Single Crystals," Nuclear Instruments and Methods in Physics Research, B36, 1989, pp. 163-172

Ascheron, C. et al, "Proton Beam Modification of Selected A-III B-v Compounds," Phys. Stat. Sol. (a), 124, 11, 1991 pp 10-55

DiCioccio, et al., "Silicon carbide on insulator formation using the Smart Cut process, Electronics Letters, Vol 32, No. 12, June 6, 1996, pp 144-145

Ascheron, C. et al, "The Effect of Hydrogen Implantation Induced Stress on GaP Single Crystals, Nuclear Instruments & Methods in Physics Research, B28, 1987, pp 350-359

Bruel, Michel, "Application of hydrogen ion beams to Silicon on Insulator material technology", Nuclear Instruments and Methods in Physics Research, B108, 1996, pp 313-319

Auberton-Herve, A.J. et al, "SOI Materials for ULSI Applications", Semiconductor International, October 1995, 5 pps.

Cristoloveanu, S. et al, "Electrical Properties of Unibond Material", Electrochemical Society Proceedings, Vol 96-3, pp 142-147

Maleville, C. et al, "Physical Phenomena Involved in the Smart-Cut Process", Electrochemical Society Proceeding, Vol 96-3, pp 34-46

Chu et al, "Radiation Damage of 50-250 keV Hydrogen Ions in Silicon", Ion Implantation in Semiconductors, eds. F. Chernob et al, Plenum New York 1976, pp 483-492

EXAMINER

D.M. Cousins

DATE CONSIDERED

12-21-01

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370 CON

Application Number

Applicant(s)

ASPAR ET AL

Filing Date

Group and Unit

COPY

*EXAMINER
INITIAL

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Dnc

Johnson, "High Fluence Deuteron Bombardment of Silicon", Radiation Effects, Vol 32, pp 159-167

Aspar, B. et al, "Characterization of SOI substrates: Application to Recent SIMOX and UNIBOND Wafers," Electrochemical Society Proceedings, Vol 96-3, pp 99-111

Bruehl, M. et al, "Smart-Cut - a new SOI Material Technology based on hydrogen implantation and wafer bonding," CEA 1996, 24 pages

Bruehl, M. et al, "Smart-Cut": A promising New SOI material technology, Proceedings 1999 IEEE, International SOI Conference, October 1995, pp 178-179

Ascheron, et al, "Swelling, Strain, and Radiation Damage of He+ Implanted GaP, Phys. Stat. Sol. (a) 96, pp 555-562, 1986

EXAMINER

D. M. Cowen

DATE CONSIDERED

12-21-01

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

COPY

FORM PTO-1449	SERIAL NO.	CASE NO. BREV 12370 CON 2
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (use several sheets if necessary)	FILING DATE	GROUP ART UNIT
APPLICANT(S): Aspar et al.		

REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

U.S. PATENTS

<u>PATENT NO.</u>	<u>INVENTOR</u>	<u>ISSUE DATE</u>
4,179,324	12/18/79	Kirkpatrick
5,110,748	5/5/92	Sarma
5,310,446	5/10/94	Konishi et al.
5,661,333	8/26/97	Bruel et al.

FOREIGN PATENTS

<u>DOCUMENT NO.</u>	<u>COUNTRY</u>	<u>DATE</u>
2725074	France	March 29, 1996
0355913	EPO	February 28, 1990
0504714	EPO	September 23, 1992

OTHER PUBLICATIONS

Silicon-On-Insulator, European Semiconductor, March, 1997, pages 17 and 18

Aspar et al., SMART-CUT®: The basic fabrication process for UNIBOND® SOI wafers, SEMI 1996, pp. 37-46

Klem et al., Characteristics of lift-off fabricated AlGaAs/InGaAs single-strained quantum well structures on glass and silicon substrates, *Inst. Phys. Conf.*, Ser. No 96: Chapter 6, pp. 387-392

Hamaguchi et al., Device Layer Transfer Technique using Chemi-Mechanical Polishing, "Japanese Journal of Applied Physics", 23(1984), Oct., No. 10, Part 2, Tokyo, Japan, pp. L815-L817

Haisma et al., Silicon-on-Insulator Wafer Bonding-Wafer Thinning-Technological Evaluations, *Japanese Journal of Applied Physics*, 28(1989), Aug., No. 8, Part 1, Tokyo, Japan, pp. 1426-1443

D. A. Courts

12-21-01

COPY

FORM PTO-1449	SERIAL NO.	CASE NO. BREV 12370 CON 2
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT	FILING DATE	GROUP ART UNIT
(use several sheets if necessary)	APPLICANT(S): Aspar et al.	

REFERENCE DESIGNATION U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS/ SUBCLASS	FILING DATE
<i>Dmc</i>	A1	4,179,324	12/18/79	Kirkpatrick	156/230	11/28/77
	A2	5,110,748	5/5/92	Sarma	437/51	7/22/91
	A3	5,310,446	5/10/94	Konishi et al.	117/58	7/13/92
	A4	5,661,333	8/26/97	Bruel et al.	257/618	1/25/95
	A5					
	A6					
	A7					
	A8					

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS/ SUBCLASS	TRANSLATION YES	NO
<i>Dmc</i>	A9	2725074	3/29/96	France			X
	A10	0355913	2/28/90	EPO		X	
	A11	0504714	9/23/92	EPO		X	

EXAMINER INITIAL	OTHER ART (Including Author, Title, Date, Pertinent Pages, etc.)	
<i>Dmc</i>	A12	Silicon-On-Insulator, <i>European Semiconductor</i> , March, 1997, pages 17 and 18
	A13	Aspar et al., SMART-CUT®: The basic fabrication process for UNIBOND® SOI wafers, <i>SEMI</i> 1996, pp. 37-46
	A14	Klem et al., Characteristics of lift-off fabricated AlGaAs/InGaAs single-strained quantum well structures on glass and silicon substrates, <i>Inst. Phys. Conf.</i> , Ser. No 96: Chapter 6, pp. 387-392
	A15	Hamaguchi et al., Device Layer Transfer Technique using Chemo-Mechanical Polishing, <i>Japanese Journal of Applied Physics</i> , 23(1984), Oct., No. 10, Part 2, Tokyo, Japan, pp. L815-L817
	A16	Haisma et al., Silicon-on-Insulator Wafer Bonding-Wafer Thinning Technological Evaluations, <i>Japanese Journal of Applied Physics</i> , 28(1989), Aug., No. 8, Part 1, Tokyo, Japan, pp. 1426-1443

EXAMINER <i>D.M. Collins</i>	DATE CONSIDERED <i>12-21-01</i>
------------------------------	---------------------------------

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE TION
(Use several sheets if necessary)

BREV 12370 CON
ASPAR ET AL
FILING

GROUP

COPY

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
Dmc	4,931,405	06/05/1990	KAMIJO ET AL	437	12	
↓	5,034,343	07/23/1991	ROUSE ET AL	437	86	
↓	5,198,371	03/30/1993	LI	437	11	

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
Dmc	53-104156	09/11/1978	JAPAN	H01L	21/322		✓
Dmc	59-54217	03/29/1984	JAPAN	H01L	21/20		✓

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Dmc		W.K. CHU, ET AL RADIATION DAMAGE OF 50-250 keV HYDROGEN IONS IN SILICON DATE UNKNOWN
Dmc		WILLIAM PRIMAK ET AL IMPURITY EFFECT IN THE IONIZATION DILATATION OF VITREOUS SILICA 1967

EXAMINER D.M. COLLINS DATE CONSIDERED 12-21-01

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE TION
(Use several sheets if necessary)

BREV 12370 CON 2

Applicant(s)
ASPAR ET AL

Filing Date

Group A

COPY

EXAMINER- INITIAL	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)
Dmc	ERROL P. EERNISSE, COMPACTION OF ION-IMPLANTED FUSED SILICA, 1973
	S.H. WEMPLE ET AL, OPTICAL AND CHANNELING STUDIES OF ION-BOMBARDED GaP, 1973, PAGES 1578-1588
	E.P. EERNISSE ET AL., ROLE OF INTERGRATED LATERAL STRESS IN SURFACE DEFORMATION OF H-IMPLANTED SURFACES, 1976, PAGES 9-17
	J.H. EVANS, AN INTERBUBBLE FRACTURE MECHANISM OF BLISTER FORMATION ON HELIUM-IRRADIATED METALS, 1977, PAGES 129-140
	N.N. GERASIMENKO ET AL, INFRARED ABSORPTION OF SILICON IRRADIATED BY PROTONS, 1978 PAGES 689-695
	A.C. GREENWALD ET AL, PULSE-ELECTRON-BEAM ANNEALING OF ION IMPLANTATION DAMAGE, 1978 PAGES 783-786
	H.C. SNYMAN ET AL, VOID FORMATION IN ANNEALED PROTON-BOMBARDED GaAs, 1981, PAGES 243-245
	S. MIYAGAWA ET AL, HELIUM REEMISSION DURING IMPLANTATION OF SILICON CARBIDE, 1982, PAGES 2302-2306
	A. MANUABA ET AL, COMPARATIVE STUDY OF Fe ₃₂ Ni ₃₆ Cr ₁₄ P ₁₂ B ₆ METALLIC GLASS AND ITS POLYCRYSTALLINE MODIFICATION BOMBARDED BY 2000 keV HELIUM IONS WITH HIGH FLUENCE 1982, PAGES 409-419
	S. MIYAGAWA ET AL, SURFACE STRUCTURE OF SILICON CARBIDE IRRADIATED WITH HELIUM IONS WITH MONOENERGY AND CONTINUOUS ENERGY DISTRIBUTIONS, 1982, PAGES 8697-8705
	H.C. SNYMAN ET AL, TRANSMISSION ELECTRON MICROSCOPY OF EXTENDED CRYSTAL DEFECTS IN PROTON BOMBARDED AND ANNEALED GaAs, 1982, PAGES 199-230
	D.R. MYERS ET AL, THE EFFECTS OF ION-IMPLANTATION DAMAGE ON THE FIRST-ORDER TAMAN SPECTRA OF GaP, 1983, PAGES 5032-5038

EXAMINER

D.M. COLTS

DATE CONSIDERED

12-21-01

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE TION

(Use several sheets if necessary)

BREV 12370 CON

Applicant(s)

ASPAR ET AL

Filing Date

Group/Unit

COPY

EXAMINER INITIAL	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)
Dme	F. PASZTI ET AL, FLAKING AND WAVE-LIKE STRUCTURE ON METALLIC GLASSES INDUCED BY MeV-ENERGY HELIUM IONS, 1983 PAGES 273-280
	C. ASCHERON ET AL, PROTON BOMBARDMENT INDUCED SWELLING OF GaP, 1985, PAGES 169-176
	C. ASCHERON ET AL, INVESTIGATION OF HYDROGEN IMPLANTED GaP CRYSTALS, 1985, PAGES 549-557
	J.H. NETHLING ET AL, IDENTIFICATION OF HYDROGEN PLATELETS IN PROTON-BOMBARDED GaAs, 1985, PAGES 941-945
	D. STEPHAN ET AL, INVESTIGATION OF LATTICE STRAIN IN PROTON-IRRADIATED GaP BY A MODIFIED AULEYTNER TECHNIQUE, 1985, PAGES 589-596
	J.C. TZENG ET AL, A NOVEL SELF-ALIGNED OXYGEN (SALOX) IMPLANTED SOI MOSFET DEVICE STRUCTURE, 1985, PAGES 112-115
	IBM TECHNICAL DISCLOSURE BULLETIN, ISOLATION BY INERT ION IMPLANTATION, 1986, VOL. 29 NO. 3
	J. HAISMA ET AL., SILICON-ON-INSULATOR WAFER BONDING-WAFER THINNING TECHNOLOGICAL EVALUATIONS, 1989, PAGES 1426-1443
	JIANMING LI, NOVEL SEMICONDUCTOR SUBSTRATE FORMED BY HYDROGEN ION IMPLANTATION INTO SILICON, 1989, PAGES 2223-2224
	H. MORICEAU ET AL, A NEW CHARACTERIZATION PROCESS USED TO QUALIFY SOI FILMS, 1991 PAGES 173-178
	A.J. AUBERTON-HERVE ET AL., SOI MATERIALS FOR ULSI APPLICATION, 1995,
✓	M. BRUEL ET AL, "SMART-CUT": A PROMISING NEW SOI MATERIAL TECHNOLOGY, 1995, PAGES 178-179

EXAMINER

DMCOWS

DATE CONSIDERED

12-21-01

EXAMINER: Initial if citation considered, whether or not citation is in conformance with NIEP Section 609; Draw line through citation if not in conformance and it considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE TION
(Use several sheets if necessary)

BREV 12370 CON 2

Applicant(s)
ASPAR ET AL

Filing Date

Group Art Unit

COPY

*EXAMINER INITIAL	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)
Dmc	M. BRUEL ET AL., "SMART-CUT": A PROMISING NEW SOI MATERIAL TECHNOLOGY, 1995, PAGES 178-179
	B. ASPAR ET AL, TRANSFER OF STRUCTURED AND PATTERNED THIN SILICON FILMS USING THE SMART-CUT PROCESS, 1996, PAGES 1985-1986
	A.J. AUBERTON-HERVE ET AL, A NEW SOI MATERIAL: SMART-CUT, 1996, PAGES 214-219
	MICHEL BRUEL, SMART-CUT PROCESS: THE WAY TO UNIBOND S.O.I. WAFERS, 1996 (PAGES UNKNOWN)
	LETI OUTLINE- A NEW SOI MATERIAL TECHNOLOGY, 1996 (AUTHOR UNKNOWN), (PAGES UNKNOWN)
	B. ASPAR, BASIC MECHANISMS INVOLVED IN THE SMART-CUT PROCESS, 1997, PAGES 223-240
	MICHEL BRUEL ET AL, SMART-CUT: A NEW SILICON ON INSULATOR MATERIAL TECHNOLOGY BASED ON HYDROGEN IMPLANTATION AND WAFER BONDING, 1997, PAGES 1636-164, COL. 36, PART 1, NO. 3B
	L. DI CIOCCIO ET AL, SILICON CARBIDE ON INSULATOR FORMATION BY THE SMART-CUT PROCESS, 1997 PAGES 349-356
	CHRISTOPHE MALEVILLE ET AL, WAFER BONDING AND H-IMPLANTATION MECHANISMS INVOLVED IN THE SMART-CUT TECHNOLOGY, 1997, PAGES 14-19
	H. MORICEAU ET AL, THE SMART-CUT PROCESS AS A WAY TO CHIEVE SPECIFIC FILM THICKNESS IN SOI STRUCTURES, 1997, PAGES (UNKNOWN)
	D. MUNTEANU ET AL, DETAILED CHARACTERIZATION OF UNIBOND MATERIAL, 1997, PAGES 395-398

EXAMINER D.M. Courts

DATE CONSIDERED

12-21-01

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and it considered. Include copy of this form with next communication to applicant.

COPY

[illegible][illegible]

Dme		Comparative study of annealed neon-, argon-, and krypton- ion implantation damage in silicon, A.G. Cullis, T. E. Seidel and R.L. Meek, J. Appl. Phys. 49(10) October 1978, pgs. 5188 - 5198
Dme		Equilibrium Shape of Si, Eaglesham, White, Feldman, Moriya nd Jacobson, Physical Review Letters, Volume 70, Number 11, March 15, 1993, pgs. 1643-1646

DATE CONSIDERED 12-21-02

PAGE 11 OF 16

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

BREV 12370 COR

APPLICANT(S)

ASPAR ET AL

FILING DATE

SERIAL NO.

GROUP

COPY

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Dme			La Formation Des Cloques, Saint-Jacques, Nuclear Instruments and Methods 209/210 (1983), pgs. 333-343
Dme			Hydrogen interaction with phosphorus ion implanted silicon, Tonini, Monelli, Corni, Ottaviani, Frabboni, Canteri, Queirolo, Ion Implantation Technolocay - 94, pgs 801-804

EXAMINER

D.M. COLTUS

DATE CONSIDERED

12-21-01

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

ATTY DOCKET NO.

SERIAL NO.

BREV 12370 CON

APPLICANT(S)

ASPAR ET AL

FILING DATE

GROUP

COPY

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Doc		Helium Bubble and Blister Formation for Nickel and An AMorphous Fe-Ni-Mo-B Alloy During 5 keV He+-Irradiation at Temperatures Between 200 K and 600 K, Swijgenhoven, Stals and Knuyt, Nuclear Instruments and Methods 209/210 (1983) pgs. 461-468
Doc		Infrared Spectroscopy of chemically bonded hydrogen at voids and defects in silicon, Stein, Myers and Follstaedt, J. Appl. Phys. 73(b6), 15 March 1993, pgs. 2755-2764

EXAMINER

D.M. COLLINS

DATE CONSIDERED

12-21-01

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

ATTY DOCKET NO.

BREV 12370

2

SERIAL NO.

APPLICANT(S)

ASPAR ET AL

FILING DATE

GROUP

COPY

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

<i>Dmc</i>			Silicon-on-insulator produced by helium implantation and thermal oxidation, Raineri, Campisano, Appl. Phys. Lett. 66 (26), 26 June 1995, pgs. 3654-3656
<i>Dmc</i>			Radiative Recombination Channels due to Hydrogen in Crystalline Silicon, Canham, Dyball, Leong, Houlton, Cullis and Smith, Materials Science and Engineering, B4 (1989) pgs 41-45

EXAMINER

D.M. COLLINS

DATE CONSIDERED

12-21-01

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE STATEMENT
(Use several sheets if necessary)

ATTY DOCKET NO.

BREV 12370 CC

SERIAL NO.

APPLICANT(S)

ASPAR ET AL

FILING DATE

GROUP

COPY

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Dme			Ion Implantation In Semiconductors 1976, Chernow, Borders and Brice, Plenum Press, New York and London, Radiation Damage of 50-250 keV Hydrogen Ions in Silicon, Chu, Kastle, Lever, Mader and Masters, S, pgs. 483-491

EXAMINER

D. M. COLLINS

DATE CONSIDERED

12-21-01

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE
(Modified) PATENT AND TRADEMARK OFFICE

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

(37 CFR 1.98(b))

ATTY. DOCKET NO.

BREV 12370 CON 2

SERIAL NO.

APPLICANT

ASPAR ET AL

FILING DATE

GROUP

COPY

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
DMC	5 3 7 4 5 6 4	12/20/94	Bruel	437	24	
	5 4 1 3 9 5 1	5/9/95	Ohori et al	437	61	
	5 5 2 4 3 3 9	6/11/96	Gorowitz et al	29	841	
	5 5 5 9 0 4 3	9/24/96	Bruel	437	24	
	5 5 6 7 6 5 4	10/22/96	Beilstein, Jr. et al	437	209	
	5 6 1 8 7 3 9	4/8/97	Takabashi et al	438	158	
	5 6 2 2 8 9 6	4/22/97	Knotter et al	438	123	

FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

	DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
DMC	7 0 3 6 0 9 A1	3/27/96	EPO	H01L	21/762		X
	5 3 3 5 5 1 A1	9/15/92	EPO	H01L	21/265		X
	6 6 5 5 8 8 A1	1/24/95	EPO	H01L	21/20		X
	2 6 8 1 4 7 2	9/18/91	France	H01L	21/265		X

OTHER DOCUMENTS (Including Author, Title, Date**, Relevant Pages, Place of Publication***)

DMC	"Silicon on insulator Material Technology" Bruel, M.
	Electronic Letters; 31 (1995) 06 July; No. 14; pgs 1201-1202
DMC	"Investigation of the Bubble Formation Mechanism in a-Si:H films by Fourier-transform infrared microspectroscopy" Mishima et al
	Japan Allied Physics; 64(8); October 15, 1988; pgs. 3972-3974

EXAMINER

D. M. COUZINS

DATE CONSIDERED

12-21-01

EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Notice of References Cited

Application No.

09/777,516

Applicant(s)

OSPAR et al.

COPY

Examiner

D.M. Collins

Group Art Unit

2823

Page ____ of ____

U.S. PATENT DOCUMENTS

* <input checked="" type="checkbox"/>	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
A	6,225,192	5/1/01	OSPAR et al.		
B					
C					
D					
E					
F					
G					
H					
I					
J					
K					
L					
M					

FOREIGN PATENT DOCUMENTS

* <input type="checkbox"/>	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
N						
O						
P						
Q						
R						
S						
T						

NON-PATENT DOCUMENTS

* <input type="checkbox"/>	DOCUMENT (Including Author, Title, Source, and Pertinent Pages)	DATE
U		
V		
W		
X		

* A copy of this reference is not being furnished with this Office action.
(See Manual of Patent Examining Procedure, Section 707.05(a).)

Notice of References Cited

Application/Control No.

09/777,516

Applicant(s)/Patent Under

Reexamination

ASPAR ET AL

Examiner

George Fourson

Art Unit

2823

Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,048,411	04-2000	Henley et al.	148/33.5
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370

N3

Application Number

09/777,516

COPY

Applicant(s)

ASPAR et al

Filing Date

February 6, 2001

Group Art Unit -

2823

*EXAMINER INITIAL	OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)
	Ascheron, C., "A Comparative Study of Swelling, Radiation, Strain and Radiation Damage of High-Energy Proton-bombarded GaAs, GaP, InP, Si and Ge Single Crystals, Nuclear Instruments and Methods in Physics Research" Nuclear Instruments and Methods in Physics Research B36(1989) 163-172.
	Ascheron, C., "A Study of Proton Bombardment Induced Swelling of GaP Single Crystals" phys. stat. sol. (a) 92, 169 (1985).
	Ascheron, C., "Gettering of Copper in Proton-and Helium-Bombarded Buried Regions of Gallium Phosphide" phys. stat. sol. (a) 106, 73 (1988).
	Ascheron, C., "Investigations of Hydrogen Implanted GaP Single Crystals by Means of Particle Induced γ -Spectroscopy, Infrared Spectroscopy, and Turyherford Backscattering Channeling Technique" phys. stat. sol. (a) 89, 549 (1985).
	Ascheron, C., "Proton Beam Modification of Selected AIIBV Compounds" phys. stat. sol. (a) 124, 11 (1991).
	Ascheron, C., "Swelling, Strain, and Radiation Damage of He+ Implanted GaP" phys. stat. sol. (a) 96, 555 (1986).
	Asheron, C., "The Effect of Hydrogen Implantation Induced Stress on GaP Single Crystals" Nuclear Instruments and Methods in Physics Research B28 (1987) 350-359.
	Bruel, M., "Silicon-On-Insulator" European Semiconductor, March 1997.
	Cassidy, Victor M., "Ion Implantation Process Toughens Metalworking Tools," Modern Metals, pp. 65-67, 1984.
	Chu et al, "Radiation Damage of 50-250 keV Hydrogen Ions in Silicon", Ion Implantation in Semiconductors, eds. F. Chernob et al., Plenum New York 1976, pp. 483-492.
	Chu, P.K. et al., Plasma Immersion Ion Implantation-A Fledgling Technique for Semiconductor Processing, Materials Science and Engineering Reports: A Review Journal, pp. 207-280, vol. R17, Nos. 6-7, Nov. 30, 1996.
	Chu, Kastle, Lever, Mader and Masters, S, Radiative Recombination Channels due to Hydrogen in Crystalline Silicon, Canham, Dyball Leong, Houlton, Cullis and Smith, Materials Science and Engineering, B4 (1989), pp. 41-45. Ion Implantation in Semiconductors 1976, Chernow, Borders and Brice, Plenum Press, New York and London, Radiation Damage of 50-250 keV Hydrogen Ions in Silicon, , pp. 483-391.

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370 N3

Application Number

09/777,516

Applicant(s)

ASPAR et al.

COPY

Filing Date

February 6, 2001

Group Art Unit

2823

*EXAMINER
INITIAL

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Cullis, A.G., T.E. Seidel and R.L. Meek, "Comparative study of annealed neon-, argon-, and krypton-ion implantation damage in silicon," J. Appl. Phys., 49(10), pp. 5188-5198, Oct. 1978.

EerNisse, E., "Compaction of ion-implanted fused silica" Journal of Applied Physics, Vol. 45, No.1, January 1974.

EerNisse, E.P., "Role of Integrated Lateral Stress In Surface Deformation of He- implanted Surfaces" Journal of Applied Physics, Vol. 48, No. 1, January 1977.

Evans, J.H., "An Interbubble Fracture Mechanism Of Blister Formation On Helium-Irradiated Metals" Journal of Nuclear Materials 68(1977) 129-140.

menko, N., "Infrared Absorption of Silicon Irradiated by Protons" phys. stat.sol. (b) 90, 689 (1978).

Gerasimenko, N., "Infrared Absorption of Silicon Irradiated by Protons" phys. stat.sol. (b) 90, 689 (1978).

Greenwald, A.C., "Pulsed-electron-beam annealing of ion-implantation damage" J. Appl. Phys. 50(2), February 1978.

Grovenor, C.R.M., Microelectronic Materials, pp. 73-75 (1989).

Haisma et al., Silicon-on-Insulator Wafer Bonding-Wafer Thinning Technological Evaluations, Japanese Journal of Applied Physics, 28(1989), Aug., No. 8, Part 1, Tokyo, Japan, pp. 1426-1443.

Hamaguchi et al., Device Layer Transfer Technique using Chemi-Mechanical Polishing, Japanese Journal of Applied Physics, 23(1984), Oct., No. 10, Part 2, Tokyo, Japan, pp. L815-L817.

Helium Bubble and Blister Formation for Nickel and An AMorphous Fe-Ni-Mo-B Alloy During 5 keV He+-Irradiation at Temperatures Between 200 K and 600 K, Swijgenhoven, Stals and Knuyt, Nuclear Instruments and Methods 209/210 (1983) pp. 461-468.

Hulett, D.M. et al., "Ion Nitriding and Ion Implantation: A Comparison," Metal Progress, pp. 18-21, 1985.

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370 N3

Application Number

09/777,516

Applicant(s)

ASPAR et al.

COPY

Filing Date

February 6, 2001

Group/Art Unit

2823

*EXAMINER
INITIAL

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Japan Applied Physics; 64(8); October 15, 1988; pp. 3972-3974.

Johnson, P.B., "High Fluence Deuteron Bombardment of Silicon" Radiation Effect 1977, Vol. 32 pp. 159-167.

"Isolation by Inert Ion Implantation" IBM Technical Disclosure Bulletin Vol. 29, No. 3, August., 1986, p. 1416.

Klem, J.F., Characteristics of Lift-Off Fabricated AlGaAs/InGaAs Single-Strained-Quantum Well Structures On Glass and Silicon Substrates, Inst. Phys. Conf. Ser. No. 96: Chapter 6, pp. 387-392 (1989).

Li, J., "Novel Semiconductor Substrate Formed by Hydrogen Ion Implantation into Silicon," Appl. Phys. Lett., vol. 55, No. 21, pp. 2223-2224, Nov. 20, 1989.

Ligeon, E., "Hydrogen Implantation in Silicon Between 1.5 and 60 KeV" Radiation Effects 1976, Vol. 27, pp. 129-137

Manuaba, A., "Comparative Study on Fe₃₂Ni₃₆Cr₁₄P₁₂B₆ Metallic Glass and its Polycrystalline Modification bombarded by 2000 keV Helium Ions with High Fluence" Nuclear Instruments and Methods 199 (1982) 409-419.

Matsuda et al., "Large Diameter Ion Beam Implantation System," Nuclear Instruments and Methods, vol. B21, pp. 314-316, 1987.

Mishima, Y. and T. Yagishita, T. "Investigation of the bubble formation mechanism in a-Si:H films by Fourier-transform infrared microspectroscopy" J. Appl. Phys., Vol. 64, No. 8, 15 October 1988.

Miyagawa, S., "Helium remission during implantation of silicon carbide" J. Appl. Phys. 54 (5), May 1983.

Miyagawa, S., "Surface structure of silicon carbide irradiated with helium ions with monoenergy and continuous energy distributions" J. Appl. Phys. 53(12), December 1982, pp.8697-8705.

Moreau, Wayne M., "Semiconductor Lithography, Principles, Practices, and Materials," Plenum Press, 1988. Table of Contents only.

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370 N3

Application Number

09/777,516

Applicant(s)

ASPAR et al.

COPY

Filing Date

February 6, 2001

Group Art Unit

2823

*EXAMINER
INITIAL

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Moriceau, H. et al, A New Characterization Process Used to Qualify SOI Films 1991 pp. 173-178.

Myers, D. R., "The effects of ion-implantation damage on the first-order Raman spectra of GaPa) J. Appl. Phys. 54(9), September 19??.

Neethling, J.H. et al., Identification of Hydrogen Platelets in Proton-Bombarded GaAs, 1985, pp. 941?-945.

Paszti, F., "Flaking and Wave-Like Structure on Metallic Glasses Induced by MeV-Energy Helium Ions" Nuclear Instruments and Methods 209/210(1983) 273-280.

Picraux, S. Thomas et al., "Ion Implantation of Surfaces," Scientific American, vol. 252, No. 3, pp. 102-113 1985.

Primak, W., "Impurity Effect in the Ionization Dilation of Vitreous Silica" J. Appl. Phys. 39(13) 1968.

Renier, M. et al., "A New Low-Energy Ion Implanter for Bombardment of Cylindrical Surfaces," Vacuum, vol. 35, No. 12, pp. 577-578, 1985.

Roth, J., "Blistering and Bubble Formation" Inst. Phys. Conf. Ser. No. 28 © 1976: Chapter 7.

Sah, Chih-Tang et al., "Deactivation of the Boron Acceptor in Silicon by Hydrogen," Appl. Phys. Lett. 43(2), July 1983, pp. 204-06.

Sioshansi, Piran, "Ion Beam Modification of Materials for Industry," Thin Solid Film, vol. 118, pp. 61-71, 1984.

Snyman, H. C., "Transmission Electron Microscopy of Extended Crystal Defects in Proton Bombarded and Annealed GaAs" Radiation Effects, 1983, Vol. 69, pp. 199-230.

Snyman, H. C., "Void formation in annealed proton-bombarded GaAs."

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

INFORMATION DISCLOSURE CITATION
(Use several sheets if necessary)

Docket Number (Optional)

BREV 12370 () 13

Application Number

09/777,516

Applicant(s)

ASPAR, et al.

COPY

Filing Date

February 6, 2001

Group Art Unit

2823

*EXAMINER
INITIAL

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

Stephan, D., "Investigation of Lattice Strain in Proton-Irradiated GaP by a Modified Auleytner Technique" phys. stat. sol. (a) 87, pp. 589-96 (1985).

Sze, S.M., VLSI Technology, 2.sup.nd Ed., pp. 9-10 (1988).

Tzeng, J.C., "A Novel Self-Aligned Oxygen (Salox) Implanted SOI Mosfet Device Structure" Nuclear Instruments and Methods in Physics Research B2, pp. 112-15 (1987).

U.S. Dept. of Energy, "The Fusion Connection: . . .", Plasma Coating, pp. 6-7, 1985.

Veldkamp, W.B. et al., "Binary Optics, " Scientific American, pp. 50-55, May 1992.

Wemple, S.H., "Optical and channeling studies of ion-bombarded GaP" J. Appl. Phys., Vol. 45, No. 4, April 1974.

Wolf, Stanley Ph.D., Silicon Processing for the VLSI Era (vol. 2), pp. 66-79, Lattice Press, 1990.

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.